

# LONDON- WEST MIDLANDS ENVIRONMENTAL STATEMENT

## Volume 5 | Technical Appendices

CFA7 | Colne Valley

**Construction assessment (SV-003-007)**

Sound, noise and vibration

November 2013

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Department  
for Transport

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A report prepared for High Speed Two (HS2) Limited.

High Speed Two (HS2) Limited,  
Eland House,  
Bressenden Place,  
London SW1E 5DU

Details of how to obtain further copies are available from HS2 Ltd.

Telephone: 020 7944 4908

General email enquiries: [HS2enquiries@hs2.org.uk](mailto:HS2enquiries@hs2.org.uk)

Website: [www.hs2.org.uk](http://www.hs2.org.uk)

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# 1 Introduction

- 1.1.1 The sound, noise and vibration appendices comprise four sections. The first of these is an introduction to the relevant route-wide methodology, assumptions and assessment (Volume 5: Appendix SV-001-000). This relates to the sound, noise and vibration assessment for all community forum areas (CFA).
- 1.1.2 For the Colne Valley community forum area (CFA 007), the other three sections are as follows:
- baseline sound, noise and vibration (Volume 5: Appendix SV-002-007);
  - construction sound, noise and vibration (Volume 5: Appendix SV-003-007) (this appendix); and
  - operational sound, noise and vibration (Volume 5: Appendix SV-004-007).
- 1.1.3 The outcomes of the assessment are summarised in Volume 2: CFA Report 07, Colne Valley (CFA Report 07), Section 11.
- 1.1.4 Maps referred to throughout the sound, noise and vibration appendices are contained in the Volume 5, Sound, Noise and Vibration Map Book.
- 1.1.5 This appendix presents the likely noise and vibration impacts, effects and significant effects arising from the construction of the Proposed Scheme for the Colne Valley area on:
- people, primarily where they live ('residential receptors') in terms of:
    - individual dwellings;
    - on a wider community basis, including any shared community open areas; and
  - community facilities such as schools, hospitals, places of worship, and also commercial properties such as offices and hotels, collectively described as 'non-residential receptors' and 'quiet areas'.
- 1.1.6 The assessment of likely impacts, effects and significant effects from construction noise and vibration on agricultural, community, ecological or heritage receptors and the assessment of tranquillity are presented in the following documents within Volume 5:
- |                                   |                     |
|-----------------------------------|---------------------|
| • Agriculture, forestry and soils | Appendix AG-001-007 |
| • Community                       | Appendix CM-001-007 |
| • Ecology                         | Appendix EC-005-007 |
| • Heritage                        | Appendix CH-003-007 |
| • Landscape and Visual            | Appendix LV-001-007 |

## **1.2 Evaluation of impacts and effects**

- 1.2.1 This appendix provides a quantitative assessment of construction noise and vibration impacts/effects and a qualitative assessment of likely significant effects, based on the impacts/effects identified and other local context information consistent with the scope and methodology defined for the Proposed Scheme.
- 1.2.2 Indirect effects arising from temporary changes in traffic patterns on the existing road network as a consequence of constructing the Proposed Scheme are also reported in this appendix, where they will occur within the study area (as defined in Volume 5: Appendix SV-001-000).
- 1.2.3 In undertaking the assessment of sound and vibration, consistent with Environmental Impact Assessment (EIA) Regulations and emerging National Planning Practice Guidance<sup>1</sup> a differentiation between impacts effects, adverse effects and significant effects is made. Further information is provided in Volume 5: Appendix SV-001-000.
- 1.2.4 The assessment of impacts and effects has been undertaken at assessment locations that are representative of a number of dwellings or other sensitive receptors. The assessment locations employed in this assessment are presented in Maps SV-03-010 and SV-03-011 (Volume 5, Sound, Noise and Vibration Map Book).

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<sup>1</sup> Information is provided in the Department for Communities and Local Government's emerging National Planning Practice Guidance – Noise <http://planningguidance.planningportal.gov.uk>, (refer to the noise exposure hierarchy), as available on 14th October 2013.

## 2 Scope, assumptions and limitations

### 2.1 Regional and local policy guidance

2.1.1 The policy framework for sound, noise and vibration is set out in Volume 1 and in Volume 5: Appendix SV-001-000. As part of the engagement with local authorities through the Planning Forum Sub Group - Acoustics, information regarding any specific local planning guidance in respect of noise and vibration has been requested. Whilst no information has been received for this study area via the Planning Forum Sub Group - Acoustics, the following local policy guidance on noise and vibration has been identified:

- The Three Rivers Local Plan - 2002;
- South Buckinghamshire District Local Plan - March 1999;
- The Hillingdon Unitary Development Plan - Sept 1998; and
- Hillingdon Local Plan: Part 1 Strategic Policies - Nov 2012.

2.1.2 This guidance has been considered as part of formulating the detailed application of the impact and significance criteria set out in Volume 5: Appendix SV-001-000.

### 2.2 Engagement

2.2.1 Details of engagement on a route-wide basis with the local and county authorities' Environmental Health Practitioners via the Planning Forum Sub Group - Acoustics, is set out in Volume 1.

2.2.2 Engagement with communities has been via the Community Forums, as set out in Volume 1. In respect of sound, noise and vibration the following discussions have taken place:

- general discussions in respect of local issues, including possible ways to avoid and mitigate the potential impacts of noise or vibration;
- September / October 2012: a specific presentation about sound, noise and vibration with discussion afterwards with one of the project team specialists;
- November / December 2012: specific request for the Community Forum regarding baseline sound monitoring locations;
- January / February 2013: feedback to the Community Forum on any proposed baseline monitoring locations; and
- verbal / written responses to questions and sound, noise and vibration.

### 2.3 Methodology

2.3.1 The methodology used for the assessment of airborne sound, ground-borne sound and vibration impacts and the determination of significant effects is defined in the Scope and Methodology Report (SMR) (Volume 5: Appendix CT-001-000/1). Further

clarification regarding specific areas is presented in the SMR addendum (Volume 5: Appendix CT-001-000/2). Further information is contained in Volume 5: Appendix SV-001-000.

## **2.4 Assumptions**

- 2.4.1 Route-wide assumptions are outlined in Volume 1 and are further detailed in Volume 5: Appendix SV-001-000. Local assumptions that apply to the assessment of construction sound noise and vibration within this area are set out in Volume 2: CFA Report 07.

## **2.5 Limitations**

- 2.5.1 The route-wide limitations and the approach adopted to assure that they will not impact the robust assessment of sound, noise and vibration are presented in Volume 5: Appendix SV-001-000. No specific additional limitations are identified for this study area.



## **3 Environmental baseline**

### **3.1 Existing baseline**

- 3.1.1 Baseline sound level data has been collected at locations representative of the airborne sound-sensitive receptors. The existing and future baseline airborne sound levels derived from these measurements are given in Volume 5: Appendix SV-002-007. Details of the baseline data collection and the methodology are given in Volume 5: Appendix SV-001-000 and specifically for this study area in Volume 5: Appendix SV-002-007.

### **3.2 Future baseline**

- 3.2.1 The assessment of noise from construction activities assumes a baseline year of 2017 which represents the period immediately prior to the start of the construction period. As a reasonable worst case, it has been assumed that no change in baseline sound levels will occur between the existing baseline (2012/13) and the future baseline year of 2017. The assessment of noise from construction traffic assumes a baseline year of 2021, representative of the middle of the construction period when the construction traffic flows are expected to be at their peak. Further information can be found in the Traffic and Transport assessment (Volume 5: Appendix TR-001-000).

## **4 Effects arising during construction**

### **4.1 Introduction**

4.1.1 The assessment is reported first for ground-borne sound and vibration and then for airborne sound. Under each of these headings, the results of the quantitative identification of impacts and effects are presented. This is followed by the identification of significant effects and the evidence used to support these conclusions.

4.1.2 The structure of this assessment report is as follows:

- Avoidance and mitigation measures
- Quantitative identification of impact and effects
  - Ground-borne sound and vibration
    - residential
    - non-residential
  - Airborne sound
    - residential
    - non-residential
- Assessment of impacts and effects
  - residential receptors: direct effects – dwellings
  - residential receptors: direct effects – communities
  - residential receptors: indirect effects
  - non-residential receptors: direct effects
  - non-residential receptors: indirect effects
  - cumulative effects from the Proposed Scheme and other committed development

### **4.2 Avoidance and mitigation measures**

4.2.1 These measures are set out in Volume 2: CFA Report 07.

### **4.3 Quantitative identification of impacts and effects**

#### **Ground-borne sound and vibration**

4.3.1 Assessment locations defined for the quantitative assessment of impacts are shown on Maps SV-03-010 and SV-03-011 (Volume 5, Sound, Noise and Vibration Map Book).

- 4.3.2 For each assessment location, the assessment results for non-residential receptors are presented in Table 1. No residential receptors have been identified in this area within the screening distances (detailed in the SMR) from works which are a potentially significant source of vibration. Explanation of the information in Table 1 is provided in Volume 5: Appendix SV-001-000, with the following additional notes:


	Where the significant effect column is highlighted, then a significant effect is identified at the referenced community, or individual receptor.
*	Significant effect – the quantitative impact methodology has identified either: <ol style="list-style-type: none"> <li>1) no impact at this receptor but further information (see assessment) has identified that a significant effect is nonetheless likely; or</li> <li>2) an impact at this receptor which, based upon further qualitative receptor information, (see assessment text) does not give rise to a significant effect.</li> </ol>
~	The forecast adverse effects are not considered to be significant on a community basis (further information on methodology is provided in Volume 5: Appendix SV-001-000).
A	Type of effect – adverse effect
S	Type of effect – significant adverse effect
NA	Type of effect – not generally an adverse effect
B	Type of effect – for non-residential receptors further detail about the type of effect is set out in the text of Appendix SV-001-000
R	Type of receptor - residential
V1	Type of receptor: <p>(V1) vibration sensitive research and manufacturing, hospital, and university equipment;</p> <p>(V2) hotels, hospital wards and education dormitories;</p> <p>(V3) offices, schools and places of worship; or</p> <p>(V4) workshops.</p>
T	Receptor design – typical
S	Receptor design – special

**Table 1: Assessment of construction induced ground-borne vibration at non-residential receptors**

Assessment location		Impact criteria				Significance criteria									Significant effect
ID	Area represented	Peak particle velocity (PPV) [mm/s] on foundation	Typical/highest monthly indoor vibration dose value (VDV) [m/s <sup>1.75</sup> ]		Construction activity resulting in highest forecast vibration levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
			Day (0700-2300)	Night (2300-0700)											
391453	North Orbital Road, Denham	0.23	0.09/0.09	-	Colne Valley viaduct: Section 2 (Grand Union Canal to River Colne) - river widening works east bank - vibratory piling rig	B	1	V1	T	-	-	-	2	-	*
709521	Jetties, Harefield	8.39	6.26/6.26	-	Colne Valley viaduct: (Section 1 - south abutment to Grand Union Canal) - construct northern jetty and temporary trestles - vibratory piling rig	B	1	V2	T	-	-	-	1	-	*

## Airborne sound: direct impacts and effects

- 4.3.3 Activities associated with the construction phases of the Proposed Scheme will generate airborne noise. The assessment of the likely impacts and significant effects as a result of the construction noise has considered the effects on:
- residential receptors, both as individual dwellings and communities; and
  - non-residential receptors, including quiet areas.
- 4.3.4 For each type of receptor, subject to the screening distances identified, and based upon supplied plant information from engineers, the typical and highest monthly  $L_{pAeq,T}$  noise levels from construction activities have been calculated at the façade of all assessment locations, which are representative of a number of receptors in the study area.
- 4.3.5 Volume 2: CFA Report 07 makes reference to any major construction activity during the evening and at night but the assessment has also considered the minor essential activities that will have to operate on a 24/7 basis for reasons of safety and engineering practicability (e.g. water pumps).
- 4.3.6 The assessment results, impact criteria and significance criteria for the assessment of the scheme at residential and non-residential receptors are presented in Table 2 and Table 3 respectively
- 4.3.7 The construction activity resulting in highest forecast noise levels is reported in Table 2 and Table 3 for each assessment location and time period, where the highest forecast noise level from any individual construction activity is above  $L_{pAeq,T}$  40dB during the daytime and evening periods and  $L_{pAeq,T}$  35dB during the night-time. Where the highest forecast noise level from any individual construction activity is less than  $L_{pAeq,T}$  40dB during the daytime and evening or  $L_{pAeq,T}$  35dB during the night-time no activities have been reported.
- 4.3.8 Explanation of the information within Table 2 and Table 3 is provided in Volume 5: Appendix SV-001-000, with the following additional notes:

 Where the significant effect column is highlighted, then a significant effect is identified at the referenced community, or individual non-residential receptor

- \* Significant effect – the quantitative impact methodology has identified either:
  - 1) no impact at this receptor but further information (see assessment) has identified that a significant effect is nonetheless likely; or
  - 2) an impact at this receptor which, based upon further qualitative receptor information, (see assessment text) does not give rise to a significant effect.
- ~ The forecast adverse effects are not considered to be significant on a community basis (further information on methodology is provided in Volume 5: Appendix SV-001-000).
- A Type of effect – adverse effect
- S Type of effect – significant adverse effect

NA	Type of effect – not generally an adverse effect
B	Type of effect – for non-residential receptors further detail about the type of effect is set out in the text of Appendix SV-001-000
R	Type of receptor - residential
G	Type of receptor:  (G1) theatres, large auditoria and concert halls;  (G2) sound recording and broadcast studios;  (G3) places of meeting for religious worship, courts, cinemas, lecture theatres, museums and small auditoria or halls;  (G4) schools, colleges, hospitals, hotels and libraries; or  (G5) offices and general commercial premises.
T	Receptor design – typical
S	Receptor design - special
H	Existing environment – high existing ambient noise levels: daytime level more than 75dB, evening-time level more than 65dB or night-time level more than 55dB $L_{pAeq}$ at the façade.
NI	Mitigation effect - identified as likely to qualify for noise insulation under the draft Construction Code of Practice (draft CoCP).
D,E,N	Impact duration (months) – duration of impact during the day (D), evening (E) or night (N).

Table 2: Assessment of construction noise at residential receptors

Assessment location		Impact criteria			Significance criteria										Significant effect
ID	Area represented	Typical/highest monthly outdoor $L_{pAeq}$ [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
383893	Tilehouse Lane, Denham	49/56 [A]	<40/<40 [B]	<35/35 [B]	Day: Colne Valley viaduct: section 3 (River Colne to north abutment) - construct pile five caps and piers; and Night: Heathrow spur (southbound) retaining wall - contiguous piles.	NA	7	R	T	-	-	-	-	-	
384372	north Orbital Road, Denham	52/60 [A]	<40/<40 [B]	<35/<35 [B]	Day: Colne Valley viaduct: section 3 (River Colne to north abutment) - piling to 17 piers (one rig).	NA	13	R	T	-	-	-	-	-	
384374	Tilehouse Lane, Denham	48/59 [A]	<40/41 [B]	<35/41 [B]	Day: Heathrow spur (southbound) retaining wall - contiguous piles; Evening: Heathrow spur (southbound) retaining wall - contiguous piles; and Night: Heathrow spur (southbound) retaining wall - contiguous piles.	NA	3	R	T	-	-	-	-	-	
384424	Wyatts Covert, Denham	41/47 [A]	<40/<40 [B]	<35/<35 [B]	Day: Colne Valley viaduct: section 3 (River Colne to north abutment) - site set up.	NA	81	R	T	-	-	-	-	-	
384540	Queen Mothers Drive, Denham Garden Village	<40/43 [A]	<40/<40 [A]	<35/<35 [B]	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct deck (seven spans).	NA	23	R	T	-	-	-	-	-	
384678	Patrons Way West, Denham	<40/43 [A]	<40/<40 [A]	<35/<35 [B]	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct	NA	14	R	T	-	-	-	-	-	

Assessment location		Impact criteria				Significance criteria										Significant effect
ID	Area represented	Typical/highest monthly outdoor L <sub>pAeq</sub> [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect		
		Day 0700-1900	Evening 1900-2300	Night 2300-0700												
	Garden Village				northern jetty and temporary trestles.											
384701	Patrons Way East, Denham Garden Village	<40/46 [A]	<40/<40 [A]	<35/<35 [B]	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct northern jetty and temporary trestles.	NA	92	R	T	-	-	-	-	-		
384843	Patrons Way East, Denham Garden Village	43/53 [A]	<40/<40 [A]	<35/<35 [B]	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct 24 cofferdams.	NA	36	R	T	-	-	-	-	-		
384928	Patrons Way East, Denham Garden Village	43/55 [A]	<40/<40 [B]	<35/<35 [C]	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct northern jetty and temporary trestles.	NA	24	R	T	-	-	-	-	-		
384986	Patrons Way East, Denham Garden Village	<40/50 [A]	<40/<40 [A]	<35/<35 [B]	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct 24 cofferdams.	NA	65	R	T	-	-	-	-	-		
385086	Tilehouse Lane, Denham	46/55 [A]	<40/<40 [B]	<35/<35 [B]	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct northern jetty and temporary trestles.	NA	12	R	T	-	-	-	-	-		
385188	Chairmans Walk, Denham Garden Village	41/50 [A]	<40/<40 [B]	<35/<35 [C]	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct northern jetty and temporary trestles.	NA	17	R	T	-	-	-	-	-		
385470	Patrons Way West, Denham	41/50 [A]	<40/<40 [A]	<35/<35 [B]	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct	NA	30	R	T	-	-	-	-	-		



Assessment location		Impact criteria				Significance criteria										Significant effect
ID	Area represented	Typical/highest monthly outdoor L <sub>pAeq</sub> [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect		
		Day 0700-1900	Evening 1900-2300	Night 2300-0700												
	Garden Village				northern jetty and temporary trestles.											
385531	Patrons Way West, Denham Garden Village	<40/47 [A]	<40/<40 [A]	<35/<35 [B]	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct northern jetty and temporary trestles.	NA	55	R	T	-	-	-	-	-		
385939	Marish Lane, Denham	<40/49 [A]	<40/<40 [B]	<35/<35 [B]	Day: Heathrow spur (northbound) retaining wall - contiguous piles.	NA	6	R	T	-	-	-	-	-		
387494	Green Tiles Lane, Denham	43/51 [A]	<40/<40 [B]	<35/<35 [C]	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct northern jetty and temporary trestles.	NA	110	R	T	-	-	-	-	-		
387745	Denham Green Lane, Denham	<40/48 [A]	<40/<40 [B]	<35/<35 [C]	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct jetty (south from Moorhill Road).	NA	35	R	T	-	-	-	-	-		
387787	Penn Drive, Denham	43/52 [A]	<40/<40 [B]	<35/<35 [C]	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct northern jetty and temporary trestles.	NA	92	R	T	-	-	-	-	-		
388230	Nightingale Way, Denham	<40/49 [A]	<40/<40 [B]	<35/<35 [C]	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct jetty (south from Moorhill Road).	NA	10	R	T	-	-	-	-	-		
388449	Tilehouse Lane, Denham	<40/47 [A]	<40/<40 [B]	<35/<35 [C]	Day: Colne Valley viaduct: section 1 (south abutment to Grand Union Canal) - construct northern jetty and temporary trestles.	NA	3	R	T	-	-	-	-	-		

Assessment location		Impact criteria				Significance criteria										Significant effect
ID	Area represented	Typical/highest monthly outdoor L <sub>pAeq</sub> [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect		
		Day 0700-1900	Evening 1900-2300	Night 2300-0700												
388708	Woodhurst Drive, Denham	<40/46 [A]	<40/<40 [A]	<35/<35 [B]	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct northern jetty and temporary trestles.	NA	26	R	T	-	-	-	-	-		
388957	Woodhurst Drive, Denham	<40/45 [A]	<40/<40 [A]	<35/<35 [B]	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct northern jetty and temporary trestles.	NA	24	R	T	-	-	-	-	-		
389222	Tilehouse Lane, Denham	47/55 [A]	<40/<40 [B]	<35/<35 [B]	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct northern jetty and temporary trestles.	NA	28	R	T	-	-	-	-	-		
389294	Tilehouse Lane, Denham	41/49 [A]	<40/<40 [B]	<35/<35 [B]	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct northern jetty and temporary trestles.	NA	3	R	T	-	-	-	-	-		
389414	Halings Lane, Denham	<40/49 [A]	<40/<40 [B]	<35/<35 [B]	Day: Chiltern tunnel - south approach embankment – filling.	NA	3	R	T	-	-	-	-	-		
389429	Tilehouse Lane, Denham	57/65 [A]	41/46 [B]	41/46 [B]	Day: Heathrow spur (southbound) retaining wall - contiguous piles; Evening: Heathrow spur (southbound) retaining wall - contiguous piles; and Night: Heathrow spur (southbound) retaining wall - contiguous piles.	NA	2	R	T	-	-	-	-	-		
390171	Moorfield Road, Denham	40/50 [A]	-	-	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct deck	NA	105	R	T	-	-	-	-	-		

Assessment location		Impact criteria				Significance criteria										Significant effect
ID	Area represented	Typical/highest monthly outdoor L <sub>pAeq</sub> [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect		
		Day 0700-1900	Evening 1900-2300	Night 2300-0700												
					(seven spans).											
390213	Savay Close, Denham	46/55 [A]	-	-	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct jetty (south from Moorhill Road).	NA	58	R	T	-	-	-	-	-		
390764	Savay Lane, Denham	50/59 [A]	<40/<40 [A]	<35/<35 [A]	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct jetty (south from Moorhill Road).	NA	6	R	T	-	-	-	-	-		
390840	north Orbital Road, Uxbridge	44/52 [A]	<40/<40 [C]	<35/<35 [>C]	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct jetty (south from Moorhill Road).	NA	119	R	T	H	-	-	-	-		
391014	Link Way, Denham	43/53 [A]	<40/<40 [B]	<35/<35 [C]	Day: Colne Valley viaduct: section 1 (south abutment to Grand Union Canal) - construct northern jetty and temporary trestles.	NA	166	R	T	-	-	-	-	-		
391133	Savay Lane, Denham	48/58 [A]	-	-	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct jetty (south from Moorhill Road).	NA	21	R	T	-	-	-	-	-		
391149	Denham Green Lane, Denham	40/50 [A]	<40/<40 [A]	<35/<35 [B]	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct northern jetty and temporary trestles.	NA	39	R	T	-	-	-	-	-		
391326	Savay Lane, Denham	51/62 [A]	<40/<40 [A]	-	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct jetty	NA	6	R	T	-	-	-	-	-		

Assessment location		Impact criteria				Significance criteria										Significant effect
ID	Area represented	Typical/highest monthly outdoor L <sub>pAeq</sub> [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect		
		Day 0700-1900	Evening 1900-2300	Night 2300-0700												
					(south from Moorhill Road).											
391389	Sheepcote Gardens, Denham	43/54 [A]	<40/<40 [B]	<35/<35 [C]	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct 24 cofferdams.	NA	33	R	T	-	-	-	-	-		
391607	Moorhall Road, Harefield	53/64 [A]	-	-	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct jetty (south from Moorhill Road).	NA	1	R	T	H	-	-	-	-		
392100	Peerless Drive, Harefield	48/58 [A]	<40/<40 [B]	<35/<35 [B]	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct northern jetty and temporary trestles.	NA	33	R	T	-	-	-	-	-		
392473	Broadwater Lane, Harefield	48/56 [A]	<40/<40 [B]	<35/<35 [>C]	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct northern jetty and temporary trestles.	NA	38	R	T	H	-	-	-	-		
395266	Chalfont Lane, West Hyde	45/54 [A]	<40/<40 [B]	<35/36 [C]	Day: Chiltern tunnel - south tunnel portal - superstructure; and Night: Chiltern tunnel - south tunnel portal – superstructure.	NA	2	R	T	-	-	-	-	-		
395380	The Hawthorns, Maple Cross	42/52 [A]	<40/<40 [B]	<35/<35 [C]	Day: Chiltern tunnel - south tunnel portal – superstructure.	NA	14	R	T	-	-	-	-	-		
395447	Birch Drive, Maple Cross	42/51 [A]	<40/<40 [B]	<35/<35 [C]	Day: Chiltern tunnel - south tunnel portal – superstructure.	NA	33	R	T	-	-	-	-	-		

Assessment location		Impact criteria				Significance criteria										Significant effect
ID	Area represented	Typical/highest monthly outdoor L <sub>pAeq</sub> [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect		
		Day 0700-1900	Evening 1900-2300	Night 2300-0700												
396118	Longcroft Road, Maple Cross	43/49 [A]	<40/<40 [B]	<35/<35 [C]	Day: Heathrow spur (southbound) retaining wall - contiguous piles.	NA	90	R	T	-	-	-	-	-		
396203	Buttlehide, Maple Cross	44/50 [B]	<40/<40 [>C]	<35/<35 [>C]	Day: Chiltern tunnel - south tunnel portal – superstructure.	NA	26	R	T	H	-	-	-	-		
396888	Old Uxbridge Road, West Hyde	54/62 [A]	<40/42 [C]	38/42 [C]	Day: Colne Valley viaduct: section 3 (River Colne to north abutment) - site set up; Evening: Heathrow spur (southbound) retaining wall - contiguous piles; and Night: Heathrow spur (southbound) retaining wall - contiguous piles.	NA	1	R	T	-	Y	-	-	-		
396910	Old Uxbridge Road, Maple Cross & Mill End	52/62 [A]	<40/43 [B]	36/43 [C]	Day: Heathrow spur (southbound) retaining wall - contiguous piles; Evening: Heathrow spur (southbound) retaining wall - contiguous piles; and Night: Heathrow spur (southbound) retaining wall - contiguous piles.	NA	1	R	T	-	-	-	-	-		
396945	Old Uxbridge Road, West Hyde	56/64 [A]	<40/45 [C]	39/45 [C]	Day: Heathrow spur (southbound) retaining wall - contiguous piles; Evening: Heathrow spur (southbound) retaining wall - contiguous piles; and Night: Heathrow spur (southbound) retaining wall - contiguous piles.	NA	2	R	T	-	Y	-	-	-		
396991	Old Uxbridge	48/58	<40/<40	<35/39	Day: Heathrow spur (southbound) retaining	NA	5	R	T	-	-	-	-	-		

Assessment location		Impact criteria				Significance criteria										Significant effect
ID	Area represented	Typical/highest monthly outdoor L <sub>pAeq</sub> [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect		
		Day 0700-1900	Evening 1900-2300	Night 2300-0700												
	Road, Rickmansworth	[A]	[B]	[C]	wall - contiguous piles; and Night: Heathrow spur (southbound) retaining wall - contiguous piles.											
397097	Old Uxbridge Road, West Hyde	46/56 [A]	<40/<40 [B]	<35/37 [C]	Day: Heathrow spur (southbound) retaining wall - contiguous piles; and Night: Heathrow spur (southbound) retaining wall - contiguous piles.	NA	20	R	T	-	-	-	-	-		
397281	Old Uxbridge Road, Rickmansworth	43/53 [A]	<40/<40 [B]	<35/<35 [B]	Day: Heathrow spur (southbound) retaining wall - contiguous piles.	NA	6	R	T	-	-	-	-	-		
397354	Old Uxbridge Road, West Hyde	44/54 [B]	<40/<40 [>C]	<35/<35 [>C]	Day: Heathrow spur (southbound) retaining wall - contiguous piles.	NA	10	R	T	H	-	-	-	-		
397534	Old Uxbridge Road, Maple Cross & Mill End	44/53 [B]	<40/<40 [>C]	<35/<35 [>C]	Day: Heathrow spur (southbound) retaining wall - contiguous piles.	NA	4	R	T	H	-	-	-	-		
399250	Park Lane, Harefield	48/56 [A]	<40/<40 [B]	<35/36 [>C]	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct northern jetty and temporary trestles ; and Night: Heathrow spur (southbound) retaining wall - contiguous piles.	NA	3	R	T	H	-	-	-	-		
399824	Jacks Lane,	47/56	<40/<40	<35/36	Day: Heathrow spur (southbound) retaining wall - contiguous piles; and	NA	15	R	T	H	-	-	-	-		

Assessment location		Impact criteria				Significance criteria										Significant effect
ID	Area represented	Typical/highest monthly outdoor L <sub>pAeq</sub> [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect		
		Day 0700-1900	Evening 1900-2300	Night 2300-0700												
	Harefield	[A]	[B]	[>C]	Night: Heathrow spur (southbound) retaining wall - contiguous piles.											
401764	Harvil Road, Harefield	52/65 [A]	<40/<40 [A]	<35/<35 [C]	Day: Harvill Road stream bridge - culvert construction (possessions).	NA	2	R	T	-	-	-	-	-		
402028	Hillside, Harefield	49/59 [A]	<40/<40 [A]	<35/<35 [B]	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct jetty (south from Moorhill Road).	NA	19	R	T	-	-	-	-	-		
402270	The Furrows, Harefield	46/57 [A]	<40/<40 [B]	-	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct jetty (south from Moorhill Road).	NA	66	R	T	-	-	-	-	-		
402669	Moorhall Road, Harefield	50/60 [A]	<40/<40 [B]	<35/<35 [>C]	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct northern jetty and temporary trestles.	NA	3	R	T	H	-	-	-	-		
402948	Truesdale Drive, Harefield	44/54 [A]	<40/<40 [A]	<35/<35 [B]	Day: Colne Valley viaduct: section 1 (south abutment to Grand Union Canal) - construct northern jetty and temporary trestles.	NA	79	R	T	-	-	-	-	-		
403127	Broadwater Gardens, Harefield	45/54 [A]	<40/<40 [B]	<35/<35 [>C]	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct northern jetty and temporary trestles.	NA	159	R	T	H	-	-	-	-		
406098	Harvil Road, Ickenham	53/59 [A]	51/53 [C]	51/52 [>C]	Day: Haul route movements - to and from road; Evening: Northolt tunnel (west) - set up site for tunnelling at West Ruislip; and	NA	2	R	T	H	-	-	-	-		

Assessment location		Impact criteria				Significance criteria										Significant effect
ID	Area represented	Typical/highest monthly outdoor L <sub>pAeq</sub> [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect		
		Day 0700-1900	Evening 1900-2300	Night 2300-0700												
					Night: Northolt tunnel (west) - Northolt northbound tunnel – tunnel boring activities.											
406180	The Drive, Ickenham	50/56 [A]	49/50 [B]	49/49 [B]	Day: Copthall retaining structure - site preparation works; Evening: Northolt tunnel (west) - set up site for tunnelling at West Ruislip; and Night: Northolt tunnel (west) - Northolt northbound tunnel – tunnel boring activities.	NA	6	R	T	-	-	-	-	-		
407707	The Drive, Ickenham	48/55 [A]	45/46 [C]	45/45 [>C]	Day: Copthall retaining Structure - site set up; Evening: Northolt tunnel (west) - set up site for tunnelling at West Ruislip; and Night: Northolt tunnel (west) - Northolt northbound tunnel – tunnel boring activities.	NA	14	R	T	H	-	-	-	-		
700365	Chalfont Lane, West Hyde	45/54 [A]	<40/<40 [B]	<35/36 [C]	Day: Chiltern tunnel - south approach cutting – excavation; and Night: Chiltern tunnel - south tunnel portal – finishes.	NA	1	R	T	-	-	-	-	-		
700366	Old Uxbridge Road, Rickmansworth	47/57 [A]	<40/<40 [B]	<35/38 [C]	Day: Heathrow spur (southbound) retaining wall - contiguous piles; and Night: Heathrow spur (southbound) retaining wall - contiguous piles.	NA	2	R	T	-	-	-	-	-		
700367	Old Uxbridge Road,	48/58 [A]	<40/<40 [B]	<35/39 [C]	Day: Heathrow spur (southbound) retaining wall - contiguous piles; and	NA	1	R	T	-	-	-	-	-		



Assessment location		Impact criteria			Significance criteria										Significant effect
ID	Area represented	Typical/highest monthly outdoor $L_{pAeq}$ [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
	Rickmansworth				Night: Heathrow spur (southbound) retaining wall - contiguous piles.										
700368	Tilehouse Lane, Denham	57/65 [A]	<40/45 [B]	40/45 [B]	Day: Colne Valley viaduct: section 3 (River Colne to north abutment) - site set up; Evening: Heathrow spur (southbound) retaining wall - contiguous piles; and Night: Heathrow spur (southbound) retaining wall - contiguous piles.	NA	1	R	T	-	-	-		-	
700370	North Orbital Road, Denham	56/64 [C]	<40/40 [>C]	36/40 [>C]	Day: Colne Valley viaduct: section 3 (River Colne to north abutment) - piling to five piers (one rig); Evening: Heathrow spur (southbound) retaining wall - contiguous piles; and Night: Heathrow spur (southbound) retaining wall - contiguous piles.	NA	1	R	T	H	-	-	-	-	
700371	North Orbital Road, Denham	53/62 [A]	<40/<40 [B]	<35/35 [B]	Day: Colne Valley viaduct: section 3 (River Colne to north abutment) - piling to 17 piers (one rig); Night: Heathrow spur (southbound) retaining wall - contiguous piles.	NA	3	R	T	-	-	-	-	-	
700372	Tilehouse Lane, Denham	51/59 [A]	<40/<40 [B]	<35/<35 [B]	Day: Colne Valley viaduct: section 3 (River Colne to north abutment) - piling to 17 piers (one rig).	NA	3	R	T	-	-	-	-	-	

Assessment location		Impact criteria				Significance criteria									Significant effect
ID	Area represented	Typical/highest monthly outdoor L <sub>pAeq</sub> [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
700373	Moorfield Road, Denham	51/62 [A]	<40/<40 [C]	<35/<35 [>C]	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct northern jetty and temporary trestles.	NA	1	R	T	H	-	-	-	-	
700374	Moorhall Road, Harefield	53/63 [A]	<40/<40 [C]	<35/<35 [>C]	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct northern jetty and temporary trestles.	NA	1	R	T	H	-	-	-	-	
700375	Moorhall Road, Harefield	55/65 [A]	<40/<40 [A]	-	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct jetty (south from Moorhill Road).	NA	1	R	T	-	-	-	-	-	
701092	Hillside, Harefield	45/57 [A]	<40/<40 [A]	<35/<35 [B]	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct seven cofferdams.	NA	12	R	T	-	-	-	-	-	
701093	Hillside, Harefield	47/57 [A]	<40/<40 [A]	<35/<35 [B]	Day: Colne Valley viaduct: section 1 (south abutment to Grand Union Canal) - construct northern jetty and temporary trestles.	NA	22	R	T	-	-	-	-	-	
701094	Dellside, Harefield	48/58 [A]	<40/<40 [A]	-	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct jetty (south from Moorhill Road).	NA	31	R	T	-	-	-	-	-	
701095	Peerless Drive, Harefield	49/60 [A]	<40/<40 [B]	<35/<35 [B]	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct northern jetty and temporary trestles.	NA	83	R	T	-	-	-	-	-	

Assessment location		Impact criteria				Significance criteria									Significant effect
ID	Area represented	Typical/highest monthly outdoor L <sub>pAeq</sub> [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
701096	Priory Close, Harefield	46/54 [A]	<40/<40 [B]	<35/<35 [B]	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct northern jetty and temporary trestles.	NA	28	R	T	-	-	-	-	-	
701097	St. Marys Close, Harefield	47/56 [A]	<40/<40 [B]	<35/<35 [>C]	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct northern jetty and temporary trestles.	NA	30	R	T	H	-	-	-	-	
701098	St. Marys Road, Harefield	47/55 [A]	<40/<40 [B]	<35/<35 [>C]	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct northern jetty and temporary trestles.	NA	83	R	T	H	-	-	-	-	

Table 3: Assessment of construction noise at non-residential receptors

Assessment location		Impact criteria				Significance criteria										Significant effect
ID	Area represented	Typical/highest monthly outdoor $L_{pAeq}$ [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect		
		Day 0700-1900	Evening 1900-2300	Night 2300-0700												
384424	Wyatts Covert, Denham	41/47	<40/<40	-	Day: Colne Valley viaduct: section 3 (River Colne to north abutment) - site set up.	B	1	G3	T	-	-	-	-	-		
384701	Patrons Way East, Denham Garden Village	<40/46	-	-	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct northern jetty and temporary trestles.	B	3	G5	T	-	-	-	-	-		
384986	Patrons Way East, Denham Garden Village	<40/50	<40/<40	-	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct 24 cofferdams.	B	1	G3	T	-	-	-	-	-		
387494	Green Tiles Lane, Denham	43/51	<40/<40	<35/<35	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct northern jetty and temporary trestles.	B	1	G4	T	-	-	-	-	-		
387494	Green Tiles Lane, Denham	43/51	-	-	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct northern jetty and temporary trestles.	B	2	G5	T	-	-	-	-	-		
387787	Penn Drive, Denham	43/52	-	-	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct northern jetty and temporary trestles.	B	1	G5	T	-	-	-	-	-		
388230	Nightingale Way, Denham	<40/49	<40/<40	<35/<35	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct jetty (south from Moorhill Rd).	B	1	G4	T	-	-	-	-	-		

Assessment location		Impact criteria				Significance criteria									Significant effect
ID	Area represented	Typical/highest monthly outdoor L <sub>pAeq</sub> [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
388449	Tilehouse Lane, Denham	<40/47	<40/<40	-	Day: Colne Valley viaduct: section 1 (south Abutment to Grand Union Canal) - construct northern jetty and temporary trestles.	B	1	G3	T	-	-	-	-	-	
388708	Woodhurst Drive, Denham	<40/46	-	-	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct northern jetty and temporary trestles.	B	2	G5	T	-	-	-	-	-	
389096	north Orbital Road, Denham	59/67	-	-	Day: Colne Valley viaduct: section 3 (River Colne to north abutment) - piling to five piers (one rig).	B	1	G5	T	H	-	-	-	-	
389194	Tilehouse Lane, Denham	54/62	<40/41	37/41	Day: Colne Valley viaduct: section 3 (River Colne to north abutment) - site set up; Evening: Heathrow spur (southbound) retaining wall - contiguous piles; and Night: Heathrow spur (southbound) retaining wall - contiguous piles.	B	1	G4	T	-	-	-	D 18	-	CSV07-No1
389294	Tilehouse Lane, Denham	41/49	-	-	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct northern jetty and temporary trestles.	B	5	G5	T	-	-	-	-	-	
389414	Halings Lane, Denham	<40/49	<40/<40	-	Day: Chiltern tunnel - south approach embankment – filling.	B	1	G3	T	-	-	-	-	-	
389414	Halings Lane, Denham	<40/49	<40/<40	<35/<35	Day: Chiltern tunnel - south approach embankment – filling.	B	1	G4	T	-	-	-	-	-	

Assessment location		Impact criteria				Significance criteria									Significant effect
ID	Area represented	Typical/highest monthly outdoor L <sub>pAeq</sub> [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
390171	Moorfield Road, Denham	40/50	-	-	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct deck (seven spans).	B	1	G4	T	-	-	-	-	-	
390171	Moorfield Road, Denham	40/50	-	-	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct deck (seven spans).	B	14	G5	T	-	-	-	-	-	
390213	Savay Close, Denham	46/55	-	-	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct jetty (south from Moorhill Road).	B	1	G3	T	-	-	-	D3	-	*
391014	Link Way, Denham	43/53	-	-	Day: Colne Valley viaduct: section 1 (south abutment to Grand Union Canal) - construct northern jetty and temporary trestles.	B	3	G5	T	-	-	-	-	-	
391149	Denham Green Lane, Denham	40/50	<40/<40	-	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct northern jetty and temporary trestles.	B	1	G3	T	-	-	-	-	-	
391211	Moorfield Road, Denham	53/62	-	-	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct northern jetty and temporary trestles.	B	1	G5	T	-	-	-	-	-	
391428	north Orbital Road, Denham	55/64	-	-	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct northern jetty and temporary trestles.	B	1	G5	T	-	-	-	-	-	

Assessment location		Impact criteria				Significance criteria										Significant effect
ID	Area represented	Typical/highest monthly outdoor L <sub>pAeq</sub> [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect		
		Day 0700-1900	Evening 1900-2300	Night 2300-0700												
391453	north Orbital Road, Denham	51/60	-	-	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct 24 cofferdams.	B	4	G5	T	-	-	-	-	-		
391607	Moorhall Road, Harefield	53/64	-	-	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct jetty (south from Moorhill Road).	B	1	G5	T	H	-	-	-	-		
392473	Broadwater Lane, Harefield	48/56	-	-	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct northern jetty and temporary trestles.	B	1	G5	T	H	-	-	-	-		
396945	Old Uxbridge Road, West Hyde	56/64	-	-	Day: Heathrow spur (southbound) retaining wall - contiguous piles.	B	2	G5	T	-	Y	-	-	-		
396991	Old Uxbridge Road, Rickmansworth	48/58	<40/<40	<35/39	Day: Heathrow spur (southbound) retaining wall - contiguous piles; and Night: Heathrow spur (southbound) retaining wall - contiguous piles.	B	1	G4	T	-	-	-	-	-		
397281	Old Uxbridge Road, Rickmansworth	43/53	-	-	Day: Heathrow spur (southbound) retaining wall - contiguous piles.	B	2	G5	T	-	-	-	-	-		
397354	Old Uxbridge Road, West Hyde	44/54	-	-	Day: Heathrow spur (southbound) retaining wall - contiguous piles.	B	2	G5	T	H	-	-	-	-		

Assessment location		Impact criteria				Significance criteria									Significant effect
ID	Area represented	Typical/highest monthly outdoor L <sub>pAeq</sub> [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
397534	Old Uxbridge Road, Maple Cross & Mill End	44/53	<40/<40	-	Day: Heathrow spur (southbound) retaining wall - contiguous piles.	B	1	G3	T	H	-	-	-	-	
397534	Old Uxbridge Road, Maple Cross & Mill End	44/53	-	-	Day: Heathrow spur (southbound) retaining wall - contiguous piles.	B	1	G5	T	H	-	-	-	-	
399680	Unnamed Road, Maple Cross & Mill End	47/57	-	-	Day: Heathrow spur (southbound) retaining wall - contiguous piles.	B	1	G5	T	H	-	-	-	-	
402270	The Furrows, Harefield	46/57	-	-	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct jetty (south from Moorhill Road).	B	8	G5	T	-	-	-	-	-	
402669	Moorhall Road, Harefield	50/60	-	-	Day: Colne Valley viaduct: section 2 (Grand Union Canal to River Colne) - construct northern jetty and temporary trestles.	B	7	G5	T	H	-	-	-	-	
402948	Truesdale Drive, Harefield	44/54	<40/<40	-	Day: Colne Valley viaduct: section 1 (south abutment to Grand Union Canal) - construct northern jetty and temporary trestles.	B	1	G3	T	-	-	-	D 4	-	*
406180	The Drive, Ickenham	50/56	-	-	Day: Copthall retaining structure - site preparation works.	B	1	G5	T	-	-	-	-	-	
408975	Harvil Road,	49/60	-	-	Day: Harvill Road bridge over Chiltern Lines -	B	10	G5	T	H	-	-	-	-	



Assessment location		Impact criteria				Significance criteria										Significant effect
ID	Area represented	Typical/highest monthly outdoor L <sub>pAeq</sub> [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect		
		Day 0700-1900	Evening 1900-2300	Night 2300-0700												
	Harefield				deck installation.											
700381	Harvil Road, Ickenham	52/59	-	-	Day: Sustainable Placement Areas - off-road movement in deposition areas.	B	1	G5	T	H	-	-	-	-		
709511	Denham Way, Maple Cross	42/51	<40/<40	<35/<35	Day: Chiltern tunnel - south approach cutting – excavation.	B	1	G4	T	H	-	-	-	-		
709521	Jetties, Harefield	71/81	<40/<40	<35/<35	Day: Colne Valley viaduct: section 1 (south abutment to Grand Union Canal) - construct northern jetty and temporary trestles.	B	1	G4	T	-	-	-	D 18	-	*	
711001	Hillingdon Outdoor Activity Centre, Dews Lane	56/66	<40/<40	-	Day: Colne Valley viaduct: section 1 (south abutment to Grand Union Canal) - construct northern jetty and temporary trestles.	B	1	G3	T	-	-	-	D 8	-	CSV07-No2	
720300	Denham Water-ski Club	65/77	<40/<40	-	Day: Colne Valley viaduct: section 3 (River Colne to north abutment) - piling to 17 piers (one rig).	B	1	G3	T	H	-	-	D 7	-	CSV07-No3	

## Airborne sound: indirect effects

- 4.3.9 Construction road traffic associated with the construction phases of the Proposed Scheme will generate airborne noise. The change in traffic noise level at a reference distance of 10m from the edge of the nearside carriageway resulting from the presence of construction traffic for a given road has been predicted, based upon traffic information for the Proposed Scheme. The results for the roads where potentially significant effects could arise are presented in Table 4.
- 4.3.10 Explanation of the information within Table 4 is provided in Volume 5: Appendix SV-001-000, with the following additional notes:



Where the significant effect column is highlighted, then a significant effect is identified on nearby communities or individual receptors

### Change values



Yellow denotes a minor impact – a change of between 3 and 5dB or between 1 and 3dB where a high existing sound level is identified



Orange denotes a moderate impact – a change of between 5 and 10dB or between 3 and 5dB where a high existing sound level is identified



Red denotes a major impact – a change of more than 10dB or more than 5dB where a high existing sound level is identified

**Table 4: Assessment of construction traffic noise levels**

Road name	Link	Future baseline sound level (dB)	Future baseline sound level construction traffic (dB)	Change (dB)	Significant effect
		Daytime L <sub>pAeq,16hr</sub> 0700-23:00 free-field	Daytime L <sub>pAeq,16hr</sub> 0700-2300 free-field		
Harvil Road (south Harefield)	Between the Proposed Scheme and the junction of Harvil Road and the B467 Swakeleys Road	71.0	72.5	+1.5	CSV07-Co1
B467 Swakeleys Road	Between the junction with Harvil Road and the A40	69.3	72.4	+3.1	CSV07-Co2

## 4.4 Assessment of significant effects

### Residential receptors: direct effects – individual dwellings

- 4.4.1 The avoidance and mitigation measures reduce noise inside all dwellings from the construction activities such that it does not reach a level where it would significantly affect residents.

### Residential receptors: direct effects – communities

- 4.4.2 The avoidance and mitigation measures in this area will avoid airborne construction noise adverse effects on the majority of receptors and communities. Residual temporary noise or vibration effects are identified later in this section.
- 4.4.3 Tunnelling support activities at the Chilterns tunnel south tunnel portal will need to be undertaken during the evening and night-time for reasons of safety, engineering practicability or to reduce the impact on existing transport. Further information is provided in Section 2.3 of the Volume 2: CFA Report 07 and in the draft CoCP.
- 4.4.4 The assessment takes into consideration the time of day that noise will be generated: noise at night is assessed against a more stringent criterion than in the evening; and in the evening against a more stringent criterion than during the day.
- 4.4.5 With regard to noise outside dwellings, the assessment of temporary effects takes account of construction noise relative to existing sound levels.
- 4.4.6 In locations with lower existing sound levels<sup>2</sup>, construction noise effects<sup>1</sup> are likely to be caused by changes to noise levels outside dwellings. These may be considered by the local community as an effect on the acoustic character of the area and hence be perceived as a change in the quality of life. These effects are considered to be significant when assessed on a community basis taking account of the local context<sup>2</sup>.
- 4.4.7 In this area, the mitigation measures reduce the effects of outdoor construction noise on the acoustic character around the local residential communities such that the effects are considered to be not significant.
- 4.4.8 Detailed information regarding landscape earth works was not available at the time of the quantitative assessment. Therefore a screening assessment of the effects of noise arising from these works on residential and non-residential receptors has been undertaken by determining the minimum distance from the works site boundary at which the onset of a construction noise impact would be expected. In accordance with the draft CoCP these effects will be subject to review as part of the Section 61<sup>3</sup> application process for the construction works. The screening assessment used represents a worst case scenario. The assessment has resulted in identification of no likely significant effects on residential receptors, taking account of the number of properties and magnitude of effect.

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<sup>2</sup> Further information is provided in Volume 5: Appendix SV-001-000.

<sup>3</sup> Section 61 Agreement under the Control of Pollution Act, 1974 (c.40). London, Her Majesty's Stationery Office.

## Residential receptors: indirect effects

4.4.9 Construction traffic is likely to cause adverse noise effects on residential receptors along the following local roads:

- Harvil Road between the junction of Harvil Road and B467 Swakeleys Road and the Proposed Scheme (CSV07-Co1) - approximately 25 dwellings located immediately adjacent to the road are forecast to experience an increase in outdoor noise levels of around 2dB during the peak months (further information is provided in Volume 2 Section 12: Traffic and Transport); and
- B467 Swakeleys Road between the junction with Harvil Road and the A40 (CSV07-Co2) - approximately 70 dwellings located immediately adjacent to the road are forecast to experience an increase in outdoor noise levels of around 3dB during the peak months (further information is provided in Volume 2 Section 12: Traffic and Transport).

4.4.10 These usually negligible increases in sound level are considered to be significant at these receptors as they are already exposed to high ambient noise levels.

## Non-residential receptors: direct effects

4.4.11 Significant construction noise or vibration effects<sup>4</sup> have been identified on the following non-residential receptors:

- De Vere Denham Grove Hotel, Tilehouse Lane, Denham CSV07-No1. A significant noise effect has been identified on a reasonably foreseeable worst case basis during the daytime with noise levels rising to 61dB<sup>5</sup>. The duration of the effect is approximately one year and three months between 2018 and 2020 during the construction of the Colne Valley viaduct and the retaining wall that provides future provision for a Heathrow spur.
- Hillingdon Outdoor Activity Centre, Dews Lane CSV07-No2. A significant noise effect has been identified on a reasonably foreseeable worst case basis during the daytime with noise levels rising to 66dB<sup>5</sup>. The duration of the effect is approximately eight months between 2018 and 2020 at the building at the centre during the construction of the Colne Valley viaduct and Harvil Road overbridge works.
- Denham Water-ski Club CSV07-No3. A significant noise effect has been identified at the club-house on a reasonably foreseeable worst case basis during the daytime with noise levels rising to 77dB<sup>5</sup>. The duration of the effect may last for approximately one year and three months between 2018 and 2020 during the construction of the Colne Valley viaduct.
- Denham Laboratories has been identified as a potentially ground-borne vibration sensitive non-residential receptor. An exceptional assessment has

<sup>4</sup> Activity disturbance, especially for activities that require good conditions for verbal communication.

<sup>5</sup> Equivalent continuous sound level at the facade, L<sub>pAeq, 0700-1900</sub>.

not yet been undertaken. However, as required by the Draft CoCP, a detailed assessment taking into account the requirements of the laboratories will be made before any construction works on the Colne Valley viaduct that may generate significant vibration effects are undertaken.

- 4.4.12 A potential daytime effect due to landscape earthworks has been identified at St Thomas' Church, Uxbridge Road, however, due to the distance from the works (200m) and the existing baseline (approximately 60dB<sup>5</sup>), it has been judged that this does not represent a significant effect.
- 4.4.13 Due to the separation distance between the Scout Hall (identified at Assessment Location 390213) from the construction works compared to the Assessment Location, and the additional screening, provide by other buildings on Savay Close, between the hall and the works it is considered that there will be no significant effect at the hall.
- 4.4.14 The reported noise level at the Harefield Community Centre (represented by Assessment Location 402948) is predicted at second floor level. The community centre is a single storey building and predicted construction noise levels at ground floor are at 52dB<sup>5</sup>. This noise level is below the assessment criteria and does not represent a significant effect.
- 4.4.15 Significant noise effects have been identified on a reasonably foreseeable worst case basis at Harefield Marina during the daytime with noise levels reaching 81dB<sup>5</sup> at the point nearest to the viaduct works site, decreasing to 68dB<sup>5</sup> at jetties located further from the works. The receptor is characterised by barges and river boats which can be used as accommodation, however, the licence at this marina only allows for a maximum of two days on board. Therefore, the monthly exposure to construction noise levels by occupants of the boats will be limited to two days and as such the occupants will not be impacted for a duration of greater than one month.
- 4.4.16 Ground-borne vibration levels above the impact criteria of the SMR at Assessment Location 709521 representing the Harefield Marina are identified in Table 1. The sensitive receptors at this location are boats moored in the marina. The transfer of vibration from construction activities to the boats, via water, will be significantly lower than the predicted ground-borne vibration levels. Therefore, this location will not be significantly affected by construction vibration.

#### **Non-residential receptors: indirect effects**

- 4.4.17 Significant noise effects on non-residential receptors arising from construction traffic are unlikely to occur in this area.

#### **Cumulative effects from the Proposed Scheme and other committed development**

- 4.4.18 This assessment has considered the potential cumulative construction noise effects of the Proposed Scheme and other committed developments<sup>6</sup>. In this area, there are no developments proposed to be built at the same time as the Proposed Scheme and

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<sup>6</sup> Refer to Volume 5: Appendix CT-004-000.

accordingly, construction noise or vibration from the Proposed Scheme is unlikely to result in any significant cumulative noise effects.

## 5 References

Control of Pollution Act 1974 (c.40). London, Her Majesty's Stationery Office.